12/15/99-01156

Response to USEPA Comments on the Human Health Risk Assessment, NNSY Phase II Scott Center Landfill Remedial Investigation/Feasibility Study, December 1999

Comments were received from USEPA on the NNSY Scott Center Landfill [OU-1(Site 2)]; the submitted comments only pertained to the human health risk assessment of the subject document. This memorandum details the Navy's responses to these comments. As noted in the received comment letter, many of these comments will apply to the Draft Final NNSY Phase II Paradise Creek Disposal Area (OU-2 (Sites 3, 4, 5, 6, 7)]. Upon your review of the response to comments, a conference call to discuss the responses in more detail is proposed.

Comment iv : Section 7.1.2.2, Selection of Chemicals of Potential Concern. The most recent RBC Table is dated April 13, 2000.

Response: The report was submitted in December 1999 using the RBCs that were applicable at the time. The risk assessment will be updated using the latest RBC table (10/00) prior to final submittal.

Comment v: Section 7.1.2.2, Selection of Chemicals of Potential Concern. Comparison with Background Concentration. The outlined method used for comparison to screen against background has no statistical basis and will no longer be accepted by Region III. Region III recommends using the following statistical testing for comparative purposes: Student t-test, Wilcoxin Rand Sum Test, Mann-Whitney U-test.

Response : The approach for selecting COPCs based on comparison to background for Sites 2, 3, 5, and Paradise Creek was determined based on discussions with Dawn Ioven, USEPA. Further discussion with EPA is required to determine how to proceed.

Comment vi: Section 7.1.3.3, Quantification of Exposure, Exposure Point Concentration, Appendix J, Generation of Fugitive Dust During Construction Activities at Site 2. All air modeling should be reviewed by Region III Air Models Specialist, Patricia Flores-Brown.

Response: The approach for the fugitive dust model has been previously reviewed and approved by Patricia Flores-Brown as part of the interim deliverable review process.

Comment vii: Section 7.1.3.3, Quantification of Exposure, Exposure Point Concentration. The proposed assumption outlined in the second paragraph regarding the data distribution will no longer be accepted by Region III. When the data distribution cannot be determined via the Shapiro-Wilkes W-test additional statistical testing should be conducted to determine the appropriate distribution. These tests include Chebychev, Jackknife, Bootstrap, Central Limit Theorem, etc.

Response: This approach was presented to EPA in the Proposed Approach Memorandum and accepted during follow-up discussions with EPA. Further discussion with EPA is required to determine an acceptable approach.

Comment viii Section 7.2.1.2, Subsurface Soil. The subsurface soil samples are eight years old and may no longer represent current site conditions.

ENCLOSURE (1)

Response: Because the site is a landfill, the subsurface soil samples consisted of waste or source material. There has been no additional site activities that have occurred that would result in an increase in the concentrations, and thus no increase in risks. Additionally, the presumptive remedy for the site is capping and institutional controls which would prevent future exposure to the subsurface soil.

Comment ix: Section 7.2.1.2, Subsurface soil. The last sentence in the paragraph reads, "Surface soil background data was used for comparison against subsurface soil data." Are these soils from the same native soil type? If no, then they should not be used for comparative purposes.

Response: Dawn also indicated that should include a comparison of similar soil types. However, the base is primarily comprised of fill material, making the comparison more complicated. A geologist was consulted and the approach was discussed with EPA prior to inclusion in the report.

Comment x: Section 7.2.4.2, Surface and Subsurface Soil – Combined – Future. Please provide the equations and parameters used in the Adult Lead Model that yield a blood lead result of 5.12ug/dl.

Response: The information for the Adult Lead model are provided in Appendix J. The equations and some parameters were taken from the EPA document *Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associate with Adult Exposure to Lead in Soil* was used for this evaluation.

Comment xii: Throughout the report risk were calculated for Resident, Trespasser, and Recreational User using both surface and subsurface soil results. Why? These receptors would primarily be exposed to surface soil and thus risk should be calculated using only the surface soil results.

Response: The combination of the surface and subsurface soil is for the future scenarios only. This is based on guidance from EPA Region III as the standard approach for future soil scenarios. The future soil scenario follows the assumption that as a result of excavation activities, the subsurface soil becomes surface soil. Thus, the future soil scenario would be the combination of subsurface and surface soil which will depict the future surface soil scenario.

Comment b. Feasibility Study. Section 2.3.1, Arsenic: The recommended agency policy regarding arsenic is no longer considered acceptable by EPA. This assumption was based on the assumption arsenic toxicity yield nonfatal skin cancer effects. However, new research has been conducted and has shown that arsenic not only causes skin cancer but other cancers as well.

Response: Will revise the PRG for arsenic per EPA's comment. Due to this change reducing the arsenic PRG to a level below what was detected in background, the FS will need to be revised to include a comparison of the site arsenic concentrations to background levels.

Comment c. Background Issues

i. **Section 3.3, Background Surface Soil Sampling. Since majority of the area is no longer native soil, what measures were taken to make sure background samples were, in fact, background? In addition, the statistics**

should be conducted on background samples that were collected from the same soil types. Were background soil types taken into consideration when evaluating the data?

Response: Multiple discussions concerning the background comparison were conducted with Dawn Ioven (6/8/98, 6/16/98, and 6/17/98). The approach used in the risk assessment was based on these conversations. Additionally, the background data was forwarded to Dawn Ioven for her review. Dawn also indicated that should include a comparison of similar soil types. However, the base is primarily comprised of fill material, making the comparison more complicated. A geologist was consulted and the approach was discussed with EPA prior to inclusion in the report.

ii. **Section 5.2.1.1, Background Surface Soil. Throughout the section the removal of outliers is discussed. Specifically, the removal of arsenic, lead, dieldrin, and benzo(a)pyrene is removed from the background data set. The report continues by stating an outlier test was conducted for these four constituents and the results were inconclusive. In addition, the calculated background 95% UCL for many of the constituents exceeded one or more of the regulatory screening criteria for soil. With all of this in mind, it would appear that the collected background samples may not "truly" represent background. Specifically, what statistical outlier test was conducted and what other testing was conducted to determine if the background samples are truly background? Were TCL analyses conducted on the background sample data? What comparative statistical tool was used to compare background samples to site related samples? Region III recommends the Student t-Test, Wilcoxin Rank Sum, and Mann Whitney U-Test as acceptable comparative statistical tools. Finally, Region III recommends screening against background at the end of the risk assessment as this offers a higher degree of conservatism.**

Response: As discussed above, there were numerous conversations with EPA concerning the background data set to determine if it was valid for use in the risk assessment. A review of the data indicated that a few of the background samples had unusually high detections of aresnic, lead, dieldrin, and benzo(a)pyrene when compared to the rest of the background data set. Thus, EPA recommended running a simple outlier that included a comparison of the maximum detected concentration in the background sample population to two standard deviations from the mean background concentration. The results of this simple outlier test did not conclusively determine if the samples were indeed outliers. Therefore, the Rosner's outlier test (*Statistical Methods for Environmental Pollution Monitoring*, Richard Gilbert) was conducted. This test was also inconclusive. Following additional discussions with EPA, the background data set was reduced for the samples with the uncharacteristically high detections that were in question. An additional outlier test was conducted following the background data set reduction resulting in a data set that was considered to be comparable. Therefore, based on close interaction with EPA, the background data set comparison was subsequently used for the COPC selection in the HHRA.

iii. **Table 2.1, Occurrence, Distribution and Selection of Chemicals of Potential Concern: The background values for the organics appear extremely high. This could be indicative that the background samples are not truly background and past site activity may have impacted areas where background samples were collected.**

Response: Based on discussions with EPA, the background comparison for only PAHs, pesticides and inorganic constituents were used in the COPC selection process in the HHRA.

Comment d. Human Health Risk Assessment Tables, Appendix J

i. **Table 1, Selection of Exposure Pathways. Please explain why this receptor and pathway is included in this table: Future, Soil, Air Emissions from Site 2 and Direct Contact to Soil for the Industrial Worker?**

Response: The site is currently landscaped and the assumption was that there is a potential that the site will remain as it is currently. Therefore, the industrial worker could potentially be exposed during mowing and general maintenance activities.

ii. **Table 2.1, 2.3, 2.4, Occurrence, Distribution and Selection of Chemicals of Potential Concern, Concentration used for Screening. The RBC for all of the listed organics is incorrect. The incorrect RBCs starts with 4,4-DDD and ends with Total Xylenes.**

Response: The RBCs listed in the table are correct. Please note that as depicted in the units column, the inorganic constituents are listed in units of mg/kg and the organics (starting at 4,4-DDD and ending at Total xylenes) are listed in units of ug/kg.

iii. **Table 2.2, Occurrence, Distribution and Selection of Chemicals of Potential Concern, Minimum and Maximum Concentrations. Although Section 7.0 clearly states soil emissions were calculated based on modeling, the section does not provide the original source where samples were taken (e.g., surface soil only, surface and subsurface soil results combined)?**

Response: As discussed on page 7-5, footnoted in Table 2.2, and shown in Appendix J – Generation of Fugitive Dust During Construction Activities at Site 2, the soil concentrations were used to estimate the modeled air concentrations. Therefore, the soil concentrations were multiplied by an estimated fugitive dust emission rate.

iv. **Table 2.4, Occurrence, Distribution and Selection of Chemicals of Potential Concern, Detection Frequency. Four groundwater samples are not enough to adequately characterize groundwater contamination. Please consult with assigned EPA Hydrogeologist.**

Response: Further discussion with EPA is required.

v. **Table 2.4, Occurrence, Distribution and Selection of Chemicals of Potential Concern. The correct RBC for iron is 1100, as used in Table 2.5**

Response: The iron RBC will be corrected to 1100 mg/kg. The Concentration Used for Screening is also incorrect and will be revised to reflect the maximum detected concentration of 1050 mg/kg. There will be no changes to the COPC list.

vi. **Table 2.6, Occurrence, Distribution and Selection of Chemicals of Potential Concern, Detection Frequency, Three groundwater samples are not enough to adequately characterize groundwater contamination. Please consult with assigned EPA Hydrogeologist.**

Response: Further discussion with EPA is required.

vii. **Table 4.1, Values Used for Daily Intake Calculations. The exposure frequency for the Industrial Worker appears low. Region III recommends using an exposure frequency of 250 days/year.**

Response: The exposure frequency is based on actual site activities. There are no industrial workers that are currently on the site or expected to be on the site in the future for 250 days/year. The only activity that occurs at Site 2 is mowing. Therefore, the exposure frequency used in the risk assessment is considered to be conservative.

viii. **Table 4.2, Values Used for Daily Intake Calculations. The (CA) Chemical Concentration in Air references "see Table 7.4" however, Table 7.4 provides the Summary of Media Specific Risks and Hazards at Site 2.**

Response: The table will be revised to "see Table 3.2".

ix. **Table 5.1, Non-cancer Toxicity Data – Oral/Dermal. The correct RfD values for 1,1,1-Trichloroethane is 2.8E-01 and 9.0E-04 for 1,3-dichlorobenzene.**

Response: The 1,1,1-Trichloroethane RfD listed in Table 5.1 is correct for what was available when the risk assessment was conducted (see 10/99 RBC table). 1,3-dichlorobenzene was not selected as a COPC for any media at Site 2 and was inadvertently listed in the Table 5.1. However, the RfD that was listed is incorrect, but will not impact the Site 2 HHRA.

x. **Table 5.2, Non-cancer Toxicity Data – Inhalation. The correct Adjusted Inhalation RfD for 1,1,1-Trichloroethane is 6.3E-01 and 1.7E-02 for 1,3-dichlorobenzene.**

Response: The 1,1,1-Trichloroethane RfD listed in Table 5.2 is correct for what was available when the risk assessment was conducted (see 10/99 RBC table). 1,3-dichlorobenzene was not selected as a COPC for any media at Site 2 and was inadvertently listed in the Table 5.2. However, the RfD that was

listed is incorrect, but will not impact the Site 2 HHRA. The table will be revised for the COPCs that were selected for Site 2 only.

xi. **Table 5.2, Non-cancer Toxicity Data – Inhalation. Please check the Adjusted Inhalation RfD for 1,2-dichlorobenzene and 1,3-dichlorobenzene.**

Response: 1,2-Dichlorobenzene and 1,3-dichlorobenzene were not selected as a COPC for any media at Site 2 and was inadvertently listed in the Table 5.2. The table will be revised for the COPCs that were selected for Site 2 only.

xii. **Table 6.1, Cancer Toxicity Data-Oral/Dermal. The correct Oral Cancer Slope Factor for benzene is 5.5E-02.**

Response: The benzene value listed in Table 5.2 is correct for what was available when the risk assessment was conducted (see 10/99 RBC table). However, benzene was not selected as a COPC for any media at Site 2 and was inadvertently listed in the Table 6.1. The table will be revised for the COPCs that were selected for Site 2 only.

xiii. **Table 6.2, Cancer Toxicity Data –Inhalation. The correct Inhalation Slope Factor for chloromethane is 3.5e-03.**

Response: The chloromethane SF is incorrectly listed in the table. Chloromethane was not selected as a COPC for any media at Site 2 and was inadvertently listed in the Table 6.2. The table will be revised for the COPCs that were selected for Site 2 only.

xiv. **Table 7.15 and 8.18 RME, Calculation of Non-Cancer Hazards. Please check the DA and final risk for chloroform. The results cannot be duplicated.**

Response: The calculation will be checked and, if necessary, follow-up discussions with EPA will occur to reconcile differences.

xv. **Table 9.4, RME Summary of Receptor Risks and Hazards for COPCs. The incorrect dermal Absorption Risk was recorded for Aroclor 1254. According to Table 7.8, RME the correct value should be 9.5e-03.**

Response: Table 9.4 will be revised accordingly. This revision will have no impact on the overall outcome of the risk assessment.